

*RevoPower*

**smart**   
T E C H  
POWER METER

INSTALLATION MANUAL

# 1. Installation Requirements and Preparation

## Introduction

Welcome to the RevoPower Smart Tech Power Meter installation guide. This manual will help you set up your new power meter to monitor key metrics of your off-grid solar, wind, or hybrid system using Home Assistant.

### Tools and Materials Needed:

- Wire strippers and cutters
- Electrical tape or heat shrink tubing for secure wire connections
- USB power supply (5V, at least 1A output)

### Safety Precautions:

- Disconnect all power sources (solar, battery, and grid) before beginning installation to avoid any electrical hazards.
- Wear insulated gloves when handling electrical wiring.
- Double-check all connections before powering the system to prevent any short circuits.

## 2. Step-by-Step Installation Guide

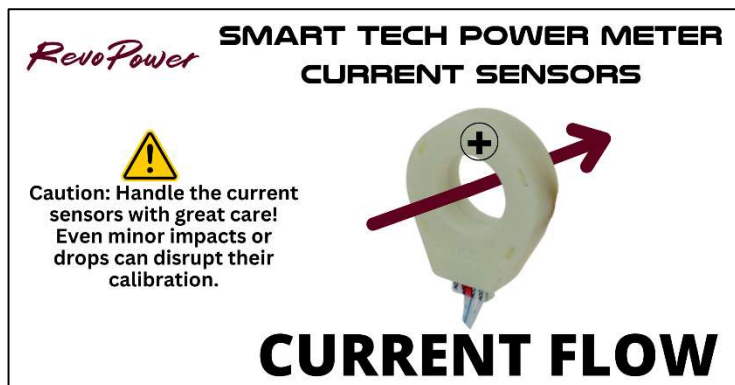
### For DIY Installations:

#### 1. Identifying Installation Points:

- Determine the points where the inverter output current and solar input current are accessible. These are typically marked in your existing system documentation.

#### 2. Installing the Current Sensors:


- Ensure the wires where the sensors will be installed are accessible and safely separated from other components.
- Position the Hall effect sensor around the wire so that the directional arrow (+) on the sensor matches the direction of the electrical flow towards the load or battery.



- Secure the sensor in place, ensuring it is connected properly and the wire is within the sensor loop.

#### 3. Connecting Voltage Sense Wires:

- Identify the terminals of both the solar panel array and the battery bank.

- The solar input voltage and battery voltage wires for the Smart Tech Power Meter will be labeled as such. XT-60 connectors  are provided for convenience. Connect the wires, then plug in the XT-60 connectors.
- We recommend connecting the solar input voltage sensor wires at the solar charge controller “PV” terminals. Battery voltage sensor wires can be connected to any terminal exposed to battery voltage.
- The wires can be soldered or connected with screw terminals, wire nuts, crimp terminals, etc. Use electrical tape or heat shrink tubing to ensure all exposed connections are insulated.

#### 4. Powering the Device:

- Connect the USB cable to a 5V USB power adapter.
- The Smart Tech Power Meter does not have an LED or button, but it will broadcast a WiFi ssid: "RevoPower-STPM" if it is connected properly.

#### For Pre-Installed Units:

- No physical installation steps are necessary. Verify the device's operational status via the WiFi ssid: "RevoPower-STPM" to ensure it is connected properly.

### 3. Configuration and Setup

#### 1. Ensure Home Assistant is Installed:

- Before starting, make sure you have [Home Assistant installed](#) and running on your local network. Home Assistant can be installed on a variety of devices, including [Home Assistant Green](#) (recommended), [Raspberry Pi](#), a virtual machine, or a dedicated server. For detailed installation instructions, refer to the [Home Assistant installation guide](#).

#### 2. Connecting the Smart Tech Power Meter to Your WiFi Network:

- Power on the Smart Tech Power Meter by plugging it into a 5V USB power adapter.
- The device will broadcast a WiFi network with an ssid similar to "RevoPower-STPM". Connect to this network using your computer or mobile device. Use the password “Revopower”.
- Once connected, a configuration portal will appear (It may show up as “Sign in to RevoPower-STPM”). (If not, open your browser and go to 192.168.4.1). Enter your home WiFi network details (SSID and password) to connect the device to your local network. Keep in mind this will only connect the Smart Tech Power Meter to your local network and RevoPower does not have access to view or access any of your data with this device. The Smart Tech Power Meter only communicates with your Home Assistant server (local) and does not require internet access.

#### 3. Finding the IP Address:

- After connecting the Smart Tech Power Meter to your WiFi network, it will be assigned an IP address by your router. To find the IP address:
  - Check your router's connected devices list. This can usually be accessed through the router's web interface.
  - Alternatively, use a network scanner app like Fing (available on iOS and Android) to scan your network for the new device. It may be listed with a name related to ESPHome or RevoPower.

#### 4. Accessing Home Assistant:

- Open your web browser and navigate to your Home Assistant dashboard. This is typically accessible by entering <http://homeassistant.local:8123> or the IP address of your Home Assistant server.

## 5. Adding the ESPHome Integration:

- In the Home Assistant dashboard, navigate to the “Configuration” menu. You can find this in the sidebar on the left.
- Select “Devices & Services,” then click on the “Add Integration” button in the bottom right corner of the screen.

## 6. Searching for ESPHome:

- In the search bar, type “ESPHome” and select it from the list of available integrations.

## 7. Adding the Smart Tech Power Meter:

- You will be prompted to enter the IP address of the Smart Tech Power Meter. Enter the IP address you identified earlier and click “Submit.”
- Follow the on-screen prompts to complete the integration process. This may include naming the device and assigning it to a specific area in your home.

## 8. Configuring the Device in Home Assistant:

- Once the Smart Tech Power Meter is added, you can configure its settings and customize its dashboard display.
- Navigate to the device in the “Devices & Services” section and click on it to access its configuration options.
- Here, you can set up automations, customize the displayed parameters, and create detailed dashboards to monitor the performance of your solar, battery, and wind systems.

## Creating Automations and Dashboards:

### 1. Setting Up Automations:

- Home Assistant allows you to create automations based on the data collected by the Smart Tech Power Meter. For example, you can set up an automation to send a notification when the battery State of Charge (SoC) drops below a certain threshold.
- Navigate to the “Automations” section under “Configuration” and click on “Add Automation.”
- Follow the prompts to set up triggers, conditions, and actions for your automation.

### 2. Creating Custom Dashboards:

- To create a custom dashboard, navigate to the “Overview” section and click on the three dots in the top right corner, then select “Edit Dashboard.”
- Click on “Add Card” to add new widgets to your dashboard. You can choose from various card types, such as gauge cards, entity cards, and history graphs, to display data from the Smart Tech Power Meter.
- Customize the appearance and layout of your dashboard to suit your preferences.

### 3. Home Assistant Energy Management:

- Since Energy is one of the most common smart home categories, Home Assistant has a dedicated dashboard for Energy Management. You can integrate your home’s utility meter, grid tied solar panels, Smart Tech Power Meter, and other devices and they’ll be automatically added to this dashboard. Find out more [here](#).

## 4. Troubleshooting Common Issues

- **Sensor Installation Problems:** Ensure the sensor is clamped correctly and the wire is not moving within the clamp. Incorrect installation can lead to erratic readings or no data. Zero readings or inaccurate data may be due to current sensors installed backwards (see 2.2).
- **WiFi Connectivity Issues:** If the device fails to connect to WiFi, check the WiFi network’s range and strength, reset your router, and restart the device to re-establish connection.

- **Data Not Syncing:** Ensure the ESPHome configuration matches the network details and the device is correctly recognized in Home Assistant. Verify the sensor and network configuration settings within Home Assistant.

## 5. Maintenance and Updates

- **Routine Checks:** Periodically check the physical condition of the sensors and wiring for any signs of wear or damage. Ensure all connections remain secure and well insulated.
- **Software Monitoring:** Keep an eye on the Home Assistant community forums and ESPHome updates to ensure compatibility and take advantage of new features.

## Fine Print

### Legal Disclaimer:

The information provided in this manual is for general guidance only. While every effort has been made to ensure accuracy, RevoPower assumes no responsibility for errors or omissions, or for damages resulting from the use of the information contained herein. RevoPower reserves the right to make changes to the product at any time without notice or obligation.

### Safety Information:

Always follow basic safety precautions when using electrical devices to reduce the risk of fire, electric shock, and injury. Do not attempt to disassemble, modify, or repair the device or sensors.

### Warranty Information:

RevoPower warrants this product to be free from defects in materials and workmanship under normal use for a period of five (5) years from the date of purchase. This warranty extends only to the original purchaser. If the product proves defective during the warranty period, RevoPower will repair or replace it at its discretion.

### Limitation of Liability:

In no event shall RevoPower be liable for any incidental, special, indirect, or consequential damages, including any loss of profits, revenue, contracts, or data, whether based on warranty, contract, tort, or any other legal theory.

### Usage Guidelines:

This device is intended for use in monitoring electrical parameters in off-grid solar, wind, and hybrid systems. It is not intended for use in on-grid systems or for medical, life-saving, or life-sustaining applications. It is your responsibility to ensure your system complies with local codes and standards.

### Technical Support and Customer Service:

For technical support, troubleshooting, or to claim a warranty, contact RevoPower customer service:

Email: [support@revopower.us](mailto:support@revopower.us)